



Universität Hamburg

DER FORSCHUNG | DER LEHRE | DER BILDUNG

Fachbereich Chemie
Tor zur Welt der Moleküle



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The power of transient conditions in catalysis research

The chemical industry uses extensively steady-state-operation whereas reaction conditions such as pressure, temperature and concentrations are rarely changed. This ensures continuous operation with minor changes in the product quality. However, using transient reaction conditions with defined changes can be a unique tool to overcome limitations of steady-state operation with respect to activity and selectivity as well as catalysts deactivation. In this presentation we will highlight two examples how transient reaction conditions can be used to improve and understand the reactivity of catalysts. We use the oxidative dehydrogenation of Ethanol as an example to show how steady state isotopic exchange transient kinetic analysis (SSITKA) helps to understand the reaction kinetics and reaction mechanism by exploiting the rate determining step.

In order to overcome catalysts deactivation, we introduce the Dynamic Responsive Catalysts concept and demonstrate it for CO₂ Methanation. Herein we show results, that firstly the right active phase must be generated and secondly that by applying dynamic reaction conditions it is possible to overcome catalyst deactivation by nanoparticle sintering.

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16 Uhr c.t.

Hörsaal B

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